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Section 10

Southeast Colorado River Basin

Utah State Water Plan

Agricultural Water

10.1 INTRODUCTION

This section of the Southeast Colorado River Basin Plan discusses information and data regarding the current and historical development of agriculture. It also discusses the agricultural problems, needs and future potential.

Agriculture is a major industry contributing to the economic well being of the area. As such, it is important that it remain viable and strong. Efforts should continue to make the best use of the land and water resources.

10.2 BACKGROUND

Irrigated agriculture has not been developed on a large-scale in the Southeast Colorado River Basin. However, San Juan County was listed as the fifth largest grain producer in the 1996 Utah Agricultural Statistics.[44] The 1992 agricultural census shows the basin had the second largest area of nonirrigated cropland harvested. With the exceptions of range cattle, sheep and dry land crops, current levels of on-farm production for basic agricultural commodities consistently rank in the lowest 20th percentile when compared with other regions of the state. The 1994 statistics for combined agricultural production indicate that less than 3.0 percent of the state's total agribusiness income can be attributed to this basin's farm and ranch production.

The limited extent of irrigated agriculture is primarily due to the lack of economically developable water supplies. As is the case with a majority of the state's arable lands, especially within the southeastern region, annual rainfall is insufficient in many areas to support most crops. Dry-land crops are produced where the annual precipitation is over about 12 inches. In these areas, dry-land beans, wheat, oats and safflower can be raised on alternate years with fallowing to allow moisture build-up. Alfalfa is also grown as a dry-land crop.

> Those who tamed the rugged frontier are still fighting to maintain the cropland and the rangeland they helped develop and preserve through conservation.

The major irrigated areas are located in Spanish Valley, around Monticello and in the Blanding area. There are smaller irrigated areas scattered around the basin, mostly where there are surface water supplies.

The livestock industry has had a large impact on the local and state production. It has also fluctuated more than any other agricultural commodity produced in basin.

In the mid 1870s, settlers to the area began to raise modest numbers of cattle, mostly along the lower elevations of the La Sal and Abajo mountains. Toward the end of the decade, a number of large cattle companies trailed in thousands of head of cattle from Texas, New Mexico, Colorado and other areas of Utah.[102] By 1885, a census indicated that well over 100,000 head of cattle were roaming the basin's range lands. However, the cattle industry at this magnitude was to soon disappear. The growth

of the cattle herds had come during a time when the weather patterns produced tall, dense stands of grass in the high-mountain summer ranges as well as the broad winter ranges. The precipitation patterns changed around 1886 and all of the southwest region was hit with the worst drought in memory. The drought lasted until 1897 with only occasional relief. Large cattle herds were sold. Today there are smaller more manageable operations. Only a few of the larger cattle operations have survived over the years and remain today; perhaps the most notable of which are the Redd Ranches and the Dugout Ranch Partnership that was recently sold to The Nature Conservancy. It should be noted that sheep were favored by many settlers. Both the cattle and sheep operations rose and fell based on changing market conditions.

Dugout Ranch

The same pattern of boom to bust was also true for the farming industry. By 1910, a steady flow of homesteaders began migrating into the basin. A 1912 newspaper article noted that over the most recent ten-year period, and thanks to a sustained 130 percent growth rate, San Juan County alone had jumped from being the least populated county to ranking above six other counties in Utah. By 1920, homesteaders lay claim to over 200,000 acres of dry cropland in the region. Irrigated farms, however, were few and far between and accounted for only a small percentage of the total farming industry. Most irrigated agriculture was developed within close proximity to existing streams and rivers as there were no large storage facilities at the time.

The prosperity of dry-land farming was short-lived. By the early 1900s, the costs of seed, farm equipment, and other agribusiness expenses escalated drastically and a drop in the price of wheat and beans further aggravated the problem. The resulting economic downswing created significant hardships on the farming community. At its lowest point, entire homestead communities were abandoned leaving little evidence of what once existed. A 1990 census indicated that fewer than fifty people in San Juan County claimed agriculture as their only source of personal income; a trend that is found throughout the basin.

Although ranching was the largest agricultural activity during the early years in Grand County, the climate soon led to raising of crops. Even though some crops could be raised with only precipitation, irrigation made production more dependable and increased the yields.

Fruit was one of the first things to attract national recognition even though it had been introduced shortly after settlement.[45] The Stewart peaches grown here were named after one of the local producers. Grapes were also one of the first fruit crops grown.

With the railroad as close as Cisco, it was possible to ship fruit to distant markets. The vitality of the area is demonstrated by the size of the fruit. Pears weighing a pound each and grapes up to 3.5 inches in circumference were sold on the Moab market. During the fruit-growing heyday, 14-ounce peaches and 25-ounce apples were common.

To avoid the waste of large fruit crops, a 5,000-container per day cannery was built in 1911. However, it went out of business during the 1930s depression.

Fruit orchards and vineyards were always mentioned when irrigation schemes were proposed. In 1897, one such project proposed diverting water from the Colorado River near Grand Junction, Colorado and conveying it in a canal to the Cisco Desert and Westwater regions to irrigate 500,000 acres. Although this project never materialized, there was limited

irrigation at Elgin and in the Westwater area.[45]

Even though the area had many advantages, there were also disadvantages. Too often frosts would kill an entire crop, making fruit growing unprofitable over the years. Floods also took their toll. This, along with the limited acreage, prohibited the area from becoming a major agricultural economic power.

Vineyard in Spanish Valley

In the late 1970s, a proposal was made to construct a large reservoir in Spanish Valley with water diverted from Mill Creek. The project did not materialize because of repeated delays and complications. At this time, less than 10 percent of the land was cultivated farmland and there were only 59 farms. Fruit and corn production were small, but still viable enterprises. The decline in farming was also a victim of increased mechanization and transportation, forcing out the small, marginal farmers.

Early dreams came true when Ken's Lake was completed in 1981. Water was diverted from Mill Creek through the Sheley tunnel. It was now possible to have a dependable water supply to irrigate the farms in Spanish Valley.

In San Juan County, several reservoirs have been constructed to store and regulate water for irrigation. The two largest and most recent are Loyd's Lake and Recapture Creek reservoirs. Loyd's Lake supplies water to the Monticello area and Recapture Creek Reservoir serves the Blanding area. Refer to Table 6-3 for data on the lakes and reservoirs in the basin.

10.3 AGRICULTURAL LANDS

The average size of farms has increased over the years reflecting the increased investment needed for a viable operation. A farm is defined as the land used as an entity in the production of agricultural commodities. A farm can include cropland, rangeland and timberland. The size of farms has increased in Grand County from 211 acres in 1930 to 717 acres in 1992 (the latest census published in the Utah Agricultural Statistics) and in San Juan County from 250 acres in 1930 to 1,577 acres in 1992. There were 294 farms in the basin according to the 1992 Census of Agriculture, 88 in Grand County and 206 in San Juan County. The total areas of cropland reported in the census for Grand County were dry cropland, 5,293; and irrigated land, 3,096 acres. There were 133,713 acres of dry cropland and 5,491 acres of irrigated land in San Juan County. The census data is different than the land-use data used in this report as the census data depends on a voluntary mail-in response and are estimates by the respondents. Also, the land-use data in this report does not include idle or fallow lands.

10.3.1 Soils

Recent soil surveys indicate that between 300,000 and 500,000 acres could be used for irrigated agriculture if water were available. However, the combination of accessible water available for use on large acreages of fertile soil for agriculture is in short supply. The areas of existing irrigated cropland are found on the fertile soil deposits along or in close proximity to existing streams or on alluvial fans. Soils on the benches and mesas produce good dry-land crops. See Section 3 for additional information.

10.3.2 Irrigated Croplands

Irrigated cropland is an important part of the agricultural industry. It is the source of many cash crops and provides the base for most of the cattle operations. There are currently 8,929 acres of agricultural land under irrigation with

the most common crops being alfalfa and pasture grass for livestock. The 4,400 acres of idle and fallow lands are not included. There are 2,784 acres of irrigated cropland in Grand County and 6,145 acres in San Juan County. Diversions and depletions of irrigation water for 1996 were 13,800 acre-feet and 6,910 acre-feet in Grand County and 21,150 acre-feet and 11,520 acre-feet in San Juan County.

A summary of irrigated cropland is listed in Table 10-1 and the major irrigated cropland areas are shown on Figure 10-1. The current rate of diversion for irrigated agriculture is 34,950 acre-feet. The irrigation efficiency in this area is high, well above the state average. The irrigated acreage and diversions to cropland are shown for each subarea in Table 10-2.

Sprinkler east of Monticello

Table 10-1
SUMMARY OF IRRIGATED AGRICULTURAL ACREAGE BY COUNTY

Crop	County		
	Grand (acres)	San Juan (acres)	Crop Total (acres)
Orchard	136	55	191
Vineyards	31	27	58
Grain	33	378	411
Corn	50	0	50
Vegetables	3	10	13
Alfalfa	1,657	3,078	4,735
Grass Hay	43	454	497
Pasture	831	1,976	2,807
Pasture Subject to Spring Flooding	0	158	158
Subtotal-Surface Irrigated Crop Land	**2,784**	**6,136**	**8,920**
Subirrigated Pasture	0	9	9
Total-Irrigated Crop Lands	**2,784**	**6,145**	**8,929**

Note: Cropland consisting of 1,115 acres of fallow (Grand County, 203 acres, San Juan County 912 acres) and 3,284 acres of idle (Grand County, 872 acres, San Juan County, 2,412 acres are not included. These acreages are part of farm units and may be irrigated on alternate years or during wet cycles.
Source: Water-Related Land Use Inventory Report of the Southeast Colorado River Basin, Division of Water Resources.

Figure 10-1

IRRIGATED AREAS

Southeast
Colorado River Basin

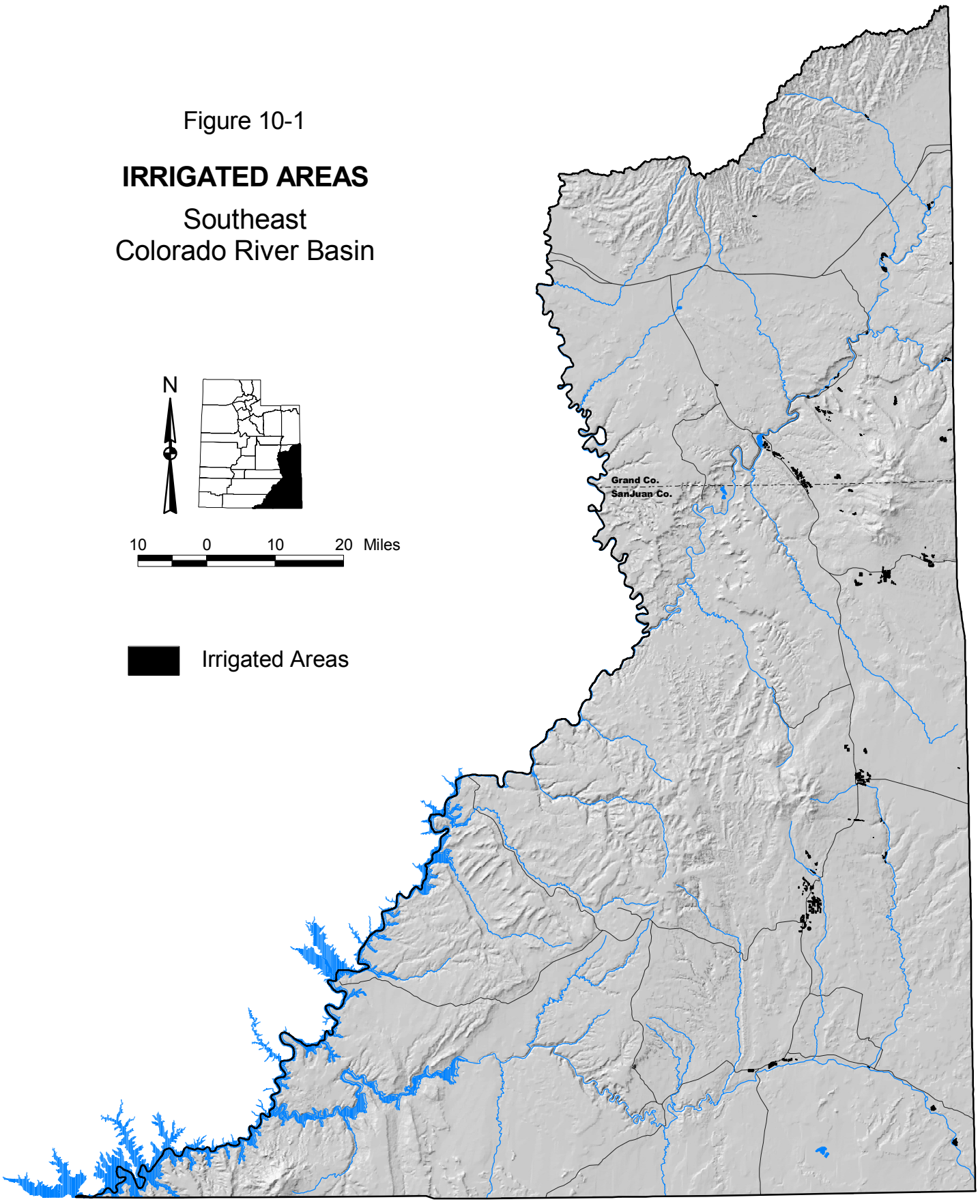

Table 10-2
IRRIGATION WATER USE AND DEPLETION[12]

Name	Subarea Number[a]	Area (acres)	Diversions (acre-feet)	Depletions (acre-feet)
Cisco	9-1-1	320	1,730	870
Dead Horse	9-1-2	30	170	90
Castle Valley	9-1-3	490	2,160	1,120
Moab	9-1-4	1,420	8,620	4,340
Kane Spring	9-1-5	370	1,280	560
Cottonwood Creek	9-1-6	450	1,920	1,250
La Sal	9-2-1	460	1,300	570
Lisbon Valley	9-2-2	740	2,520	1,140
San Juan	8-3-1	510	1,290	630
Blanding	9-3-3	2,560	9,370	5,300
Monticello	9-3-4	1,530	4,280	2,400
McElmo	9-3-5	50	310	160
Total		**8,930**	**34,950**	**18,430**

[a] See Figure 5-1 for subarea locations.
Note: Irrigated area does not include idle or fallow land. Subareas 8-5, Lower Green; 8-6, Lake Powell; 9-2-3, Summit Canyon; 9-3-2, Grand Gulch; and 9-4, Wahweep do not have irrigated areas.

Most of the irrigated cropland is located within the small valleys in-and-around perennial streams and rivers.

10.3.3 Dry Cropland

There are about 130,400 acres of dry cropland in the basin with about 2,200 acres in Grand County and 128,200 acres in San Juan County. These are mostly in the San Juan River basin on high mesas or bench land. In 1999, the following acreages were harvested in San Juan County: winter wheat, 21,118 acres; spring wheat, 1,100 acres; oats, 900 acres; safflower, 12,046 acres; pinto beans, 6,200 acres; and alfalfa, 2,300 acres for a total of 43,664 acres.

In addition, over 80,000 acres of dry cropland are under the federal conservation reserve program. Under this program, there are incentives for farmers to take cropland out of production for 10 years. Farmers plant a

Dry farm near Monticello

mixture of grasses, forbes and shrubs to prevent erosion and enhance wildlife habitat. This draws big game away from neighboring farms resulting in less depredation. The Farm Service Agency and Division of Wildlife Resources pay for 75 to 100 percent of the cost.

10.3.4 Range and Forest Land

About 2.36 million acres of the basin's total land area of 6.98 million acres is considered rangeland; most of which is grazed by cattle or sheep. Most of the rangeland is managed by the Bureau of Land Management. The Manti-La Sal National Forest is managed by the Forest Service and includes major drainages that provide M&I and agricultural water to users throughout the area. In addition, there are scattered tracts of state lands and blocks of private lands used for grazing throughout the basin.

10.4 AGRICULTURAL PROBLEMS

Most of the agricultural water problems are related to irrigation water use although there is a need for more stockwatering facilities in the rangeland areas. Other problems include erosion and sediment production. Weed control is a problem in many agricultural areas. Another limiting factor for a viable agricultural economy is lack of a cash crop. This would provide the needed cash flow.

10.4.1 Irrigation Water Problems

Irrigation water development is becoming prohibitive because of the lack of available water and the large cost involved. About the only way agricultural water could be developed is in connection with other projects or to piggy-back on municipal and industrial water projects. In some areas, the trend toward conversion of farmland to residential and commercial development will also reduce the likelihood of agricultural water projects.

The quality of water diverted for irrigation is generally good with the exception of McElmo Creek, a tributary to the San Juan River, and Onion Creek, a tributary to the Colorado River above Moab. Water from springs and wells is of good quality unless it comes from very deep, semi-confined aquifers where recharge is slow. Water from Castle Creek, Mill Creek, South Creek and Recapture Creek are less than 165 mg/L (275 μmhos/cm). Onion Creek is about 660 mg/L (1,120 μmhos/cm) and McElmo Creek is about 1,920 mg/L (3,250 μmho/cm).

10.4.2 Erosion and Sedimentation Problems

The Southeast Colorado River Basin contains many areas of considerable erosion. The scenic land forms carved in the rocks throughout the area are evidence of geologic erosion. Soil erosion has occurred in many areas where the land is flatter, where vegetative cover is poor and where it is subject to cloudburst floods. In many areas, geologic or background erosion is moderate to heavy. Erosion is defined as movement of soil from a specified location. Sediment yield is the amount of the eroded material deposited at some point downstream from the eroded area.

The Montezuma Creek drainage has been of particular concern because of the extensive dry-crop farming practices. This area was the subject of an intensive study by the Natural Resources Conservation Service (NRCS), Bureau of Land Management and others. A report of the findings was published in June 1992.[68] The estimated geologic erosion rate for this area was 3 tons/acre net sediment yield and about 6 tons/acre/year gross erosion. The recommended NRCS maximum tolerable gross erosion is 5 tons/acre. Gross erosion is a measure of the potential for soil to be moved from its place of origin, not the amount of soil that reaches a stream or lake.

Severely accelerated concentrated-flow erosion is occurring on a portion of the Montezuma Creek watershed. These areas contain rangeland and cropland. Some cropland located on steep slopes (up to seven percent) are eroding at a rate of 39 tons per acre

annually. The erosion is causing on-site and off-site sedimentation damages to riparian areas, rangeland, and cropland; off-site water quality impairment; damage to archaeological sites; reduced infiltration of storm flows; and increased sedimentation into the San Juan River. Presently, there is severe erosion on 82,500 acres of rangeland yielding 236,460 tons (136 acre-feet) of sediment annually and 17,600 acres of cropland yielding 216,480 tons (124 acre-feet) of sediment annually to the San Juan River. In addition, bank erosion is producing 87,000 tons (50 acre-feet) of sediment annually. The total salt load from these sources is 15,230 tons annually.

10.5 AGRICULTURAL OPPORTUNITIES

Improvement of water use efficiency is one way to realize additional monetary benefits from an existing supply. Delivery systems can be upgraded by lining high-seepage areas in canals with concrete or plastic lining and by installing pipelines. Improving or rebuilding diversion structures and installing effective measurement and management controls can also increase efficient use of water.

On-farm irrigation efficiency improvements can make the water go further. This can be done by installing sprinklers or improving existing flood irrigation methods.

The Bluff Bench Project was a large agricultural project proposed for development in the 1970s.[5] Located on the mesa northeast of Bluff, the project would include a total of about 4,900 acres; 4,200 acres to grow orchards and vineyards and 700 acres for farmsteads, roads and windbreaks. Water was to be pumped from the San Juan River requiring a lift of 300 to 500 feet in elevation in addition to pressure for sprinkler irrigation. Test plots were planted and irrigated and it was determined the soils, water quality and climate were satisfactory to support a large-scale agricultural project. However, the high cost of pumping water from the San Juan River to the cropland made the project economically infeasible.

The West Bluff Project was also investigated to determine the feasibility of irrigation in this area. There were about 1,200 acres of irrigable land including 150 acres owned by the Navajo Indians. This area was located in a 5-mile strip along the San Juan River and would produce alfalfa and small grains. This project was never completed due to inadequate funding.

The Dolores Project was built by the Bureau of Reclamation during the 1980s. Use of some of the water developed has been investigated through the joint efforts of San Juan County and the San Juan Water Conservancy District. This project includes the possibility of an irrigated agricultural development near the Utah-Colorado border. There is no action on this project at the present time. Costs will be the deciding factor on developing this water for agriculture. See Section 9 for more information on this project.

Strip-cropping to reduce erosion

The San Juan Water Conservancy District has an annual allocation of 20,000 acre-feet of water in the San Juan River. This water should be considered for development in the future. The most difficult problems to overcome include constructing and maintaining a diversion works and control of the large silt-load.

The current accelerated erosion rates need to be reduced. The best way is to establish a

healthy watershed. Terracing and strip cropping will reduce erosion as will planting the rangeland with a variety of grasses and forbes along with brush in the lower watershed areas. These practices will require an intensive rehabilitation program along with effective grazing management. ❑